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SEED SELECTION FOR SOUTHERN FARMS.

REASONS FOR SEED SELECTION.

For the amount of labor involved no work upon the farm pays better than seed selection. Within a seed is the minute germ that has all the characteristics of the preceding generations of that species, with the modifications which previous culture, soil, climate, and selection have given it, and these it transmits to the future plants. In addition, the seed contains a little food to help the germ until it can get established in the soil.

While the types in seed are persistent along general lines, within these limits they admit of great modification by selection and cultivation. In cotton the size of the boll, the length and quality of lint, the time of maturity, the tendency to abundant fruitage, the height and form of stalks, and other plant characteristics may be modified at the will of the farmer.

When a farmer buys a high-grade seed at a large price he is simply paying another man for using his brain to do what he can do just as well if he will.

IMPROVEMENT OF COTTON BY SEED SELECTION.

Careless cotton farming and gin-run seed are responsible for a lot of short cotton crops. There is but little pure-bred seed planted, and the product of that little generally becomes more or less mixed in the field and at the gin.

Five points should be carefully noted in cotton-seed improvement:[a] Type, variety, selection, ginning, and storing. A farmer should determine the type of cotton he wants to produce. He can in the end produce what he wants to if he studies and works for it. By "type" is meant the kind of stalks, boll, lint, etc. The type generally preferred is a strong, short, vigorous stalk, with plenty of fruit limbs on the

[a] See Farmers' Bulletin No. 314, entitled "A Method of Breeding Early Cotton to Escape Boll-Weevil Damage," which will be sent without cost upon application to the Secretary of Agriculture.

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lower half; fruit limbs short jointed but extending to the outer border of the plant and fruiting to the end; large bolls, storm resisting; a heavy percentage of lint; staple at least $1\frac{1}{8}$ inches and strong; plant hardy, early, and prolific.

CHOOSING THE VARIETY.

Plant seed of a variety that produces cotton as near the type you want as possible. It will not be exactly your ideal, but if good seed and of the right variety it will come near it. Plant this seed on a separate tract of land, or plat, so it will not become mixed by insects. Every farmer needs a seed plat just as much as he needs a well-bred male if he is going to improve his stock. Thin and cultivate this plat in the best way.

FIG. 1.—An early, rapid-fruiting, productive type of cotton plant (leaves removed), with low fruit limbs, short joints, and continuous-growing long fruit limbs. (From Farmers' Bulletin No. 314.)

SELECTING THE SEED.

Let us go personally to the seed plat in the fall with the sack over our shoulder and make selections. Here is an ideal stalk about three feet tall, loaded with choice bolls. (See fig. 1.) There will be more than a pound of lint cotton on it at maturity. Around the heart of the plant we select the best bolls, rejecting the bolls on the ends of the limbs and near the top and a few that are so low as to nearly touch the ground. The top and end bolls tend to later maturity and the seeds in bolls too near the ground absorb the moisture and are not as vigorous as they should be.

The next stalk is not quite so perfect, but is pretty good, and we take a few of the best bolls. On the next stalk are four or five great fine bolls. (See fig. 2.) My man was along with a sack and he was just about to pick them; in fact, his fingers had closed over one. "Let them alone," I called out. "Look at that stalk; it never thought about going into the cotton business until it was half grown. There is only about an eighth of a pound of cotton on it if all the bolls mature. That plant has some bad blood in it or is a black sheep in a good flock. We do not want to raise that kind."

Then we passed several plants not very good and not very poor. Just a few feet along the row I noticed two remarkably fine bolls near the top of a stalk. Something called my attention away, and when I looked back my man had them. "Ain't they fine?" he remarked, and he gave a smile of satisfaction. "Right," I replied, "if you do not see the plant. They grow too near the top and will tend to make our crop late." "If you are going to be so particular, we shan't get much cotton seed," he answered, rather shortly. "Bob," I replied, "I am through making these quarter-of-a-bale cotton crops. They say that like produces like. Now, that first stalk of cotton we picked had over a pound on it and if all the stalks on this plat were just like it we should get two and one-half bales of cotton per acre. I intend to make a two-and-a-half-bale crop, and I am going to commence by selecting the right seed to do it."

FIG. 2.—Cotton plant bred for unproductiveness and late fruiting. Leaves removed. (From Farmers' Bulletin No. 314.)

The next plant was loaded with bolls, but it did not stand over 18 inches high. "That is a perfect plant," I remarked, "but we will not take any bolls from it. It is too small. Never select a runt pig for a prize winner at the fair. If I had an acre of such plants they would not hold as much cotton as I want."

In this way we went over the 2-acre plat and secured 200 pounds of seed cotton. This was carefully stored and ginned. The next year there were three times as many perfect stalks in the field as the previous season. In three years nearly every plant was a model and we had a two-and-a-half-bale crop.

In making selections never pick a boll for seed except from a plant that is just what you want your crop to be next year. You can not buy such seed. *Raise it.*

Select your seed early for next year's crop.

GINNING AND CLEANING SEED COTTON.

Store your selected seed in a dry place and wait until the steam gins are nearly through; then carefully clean the gin, put down a sheet to

catch the seed, and run your selected lot through. Store in a dry place till it is time for planting.

Before planting, run this seed through a fanning mill,[a] blowing out any seed that may be light and screening out any that are too small. Follow this method just as closely as possible. A peck of such screened seed will produce more strong plants than a bushel of the seed commonly planted.

IMPROVEMENT OF CORN BY SEED SELECTION.

Corn is one of the easiest plants to modify that the farmer has to deal with, and there is no plant that will respond more quickly to intelligent efforts at improvement. Corn is also very susceptible to the effect of a change of climatic or soil conditions; hence, it is very diffi-

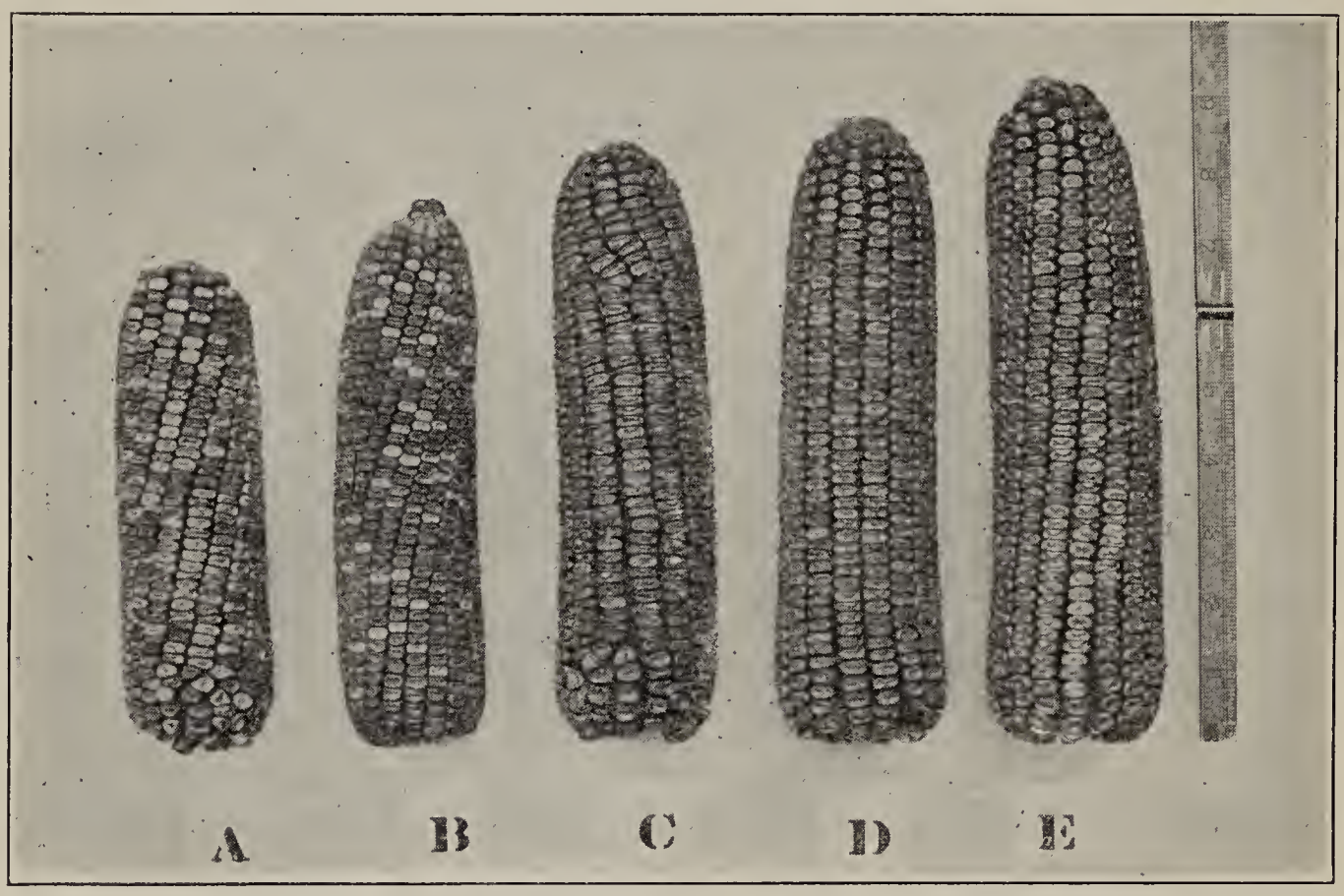

FIG. 3.—Illustration of the yield of corn per acre, allowing a single ear for each hill, the hills being 3½ feet apart: A, 29 bushels; B, 30 bushels; C, 40 bushels; D, 45 bushels; E, 50 bushels. (From Farmers' Bulletin No. 253.)

cult to predict that the best variety at one place will prove to be the best in another locality. The operation of these facts often accounts for the great number of disappointments experienced in purchasing new varieties of corn and emphasizes the importance of at least one farmer in each community making it a business to select his seed corn with a view to obtaining the best variety for his section. In fact, this improvement of corn by selection is so simple that there is no reason why each farmer should not give it his attention. Unless this is done, seed will soon "run out," and it is constantly necessary to purchase improved seed corn if it is desired to obtain the best results. (See fig. 3.)

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[a] See Farmers' Bulletin No. 285, entitled "The Advantage of Planting Heavy Cotton Seed," which will be sent without cost upon application to the Secretary of Agriculture.

Farmers' Bulletin No. 229, entitled "The Production of Good Seed Corn," is a treatise on the selection and care of seed corn which should be in the hands of every farmer.

FIELD SELECTION OF SEED CORN.

Without going into the reason for it, the following is a brief outline of just how to select seed corn.

The corn it is desired to improve should be planted on a specially prepared plat and well cultivated. When the plants have silked, go through the field and remove all plants that have not started an ear. After this and before harvesting go through the plat carefully and select the best stalks, marking them so they can be readily distinguished.

An ideal stalk is one without suckers, thick at base, with well-developed roots, as shown by its vigorous growth, and bearing a good ear or ears about 4 feet from the ground. The stalk when mature should be between 8 and 10 feet high.

If it is desired to produce an early variety, only those stalks that mature first should be marked.

FIG. 4.—A productive and a barren stalk. (From Farmers' Bulletin No. 229.)

Select stalks that are free from smut or disease and are not in the immediate neighborhood of other diseased stalks. The stalks should have two good ears upon shanks 4 or 5 inches long, and these ears should show a decided tendency to turn down. The accompanying cut (fig. 4) shows desirable and undesirable stalks.

GATHERING AND STORING THE SEED EARS.

As soon as the corn is sufficiently dry it should be carefully gathered and housed. In gathering for seed, gather only from the selected stalks that have two ears. If there are two good ears on a stalk, take both. If one is poor, select only the good one. Gather for seed only

those ears that have the end well covered with a close-fitting shuck, as this is a very effective protection against the weevil. Except as stated, not much can be done in selecting the ear at this time. Store the ears in a cool, dry, well ventilated place and not in too great a bulk, so there will be no danger of heating. Seed corn should also be kept from freezing.

When the opportunity presents itself during the winter, this seed corn should be carefully shucked and the best ears selected.

THE IDEAL EAR.

An ideal ear of corn is nearly cylindrical in shape, tapering only slightly from the butt to the tip. The tip should be fairly abrupt. The rows of corn should be straight and compact, commencing close

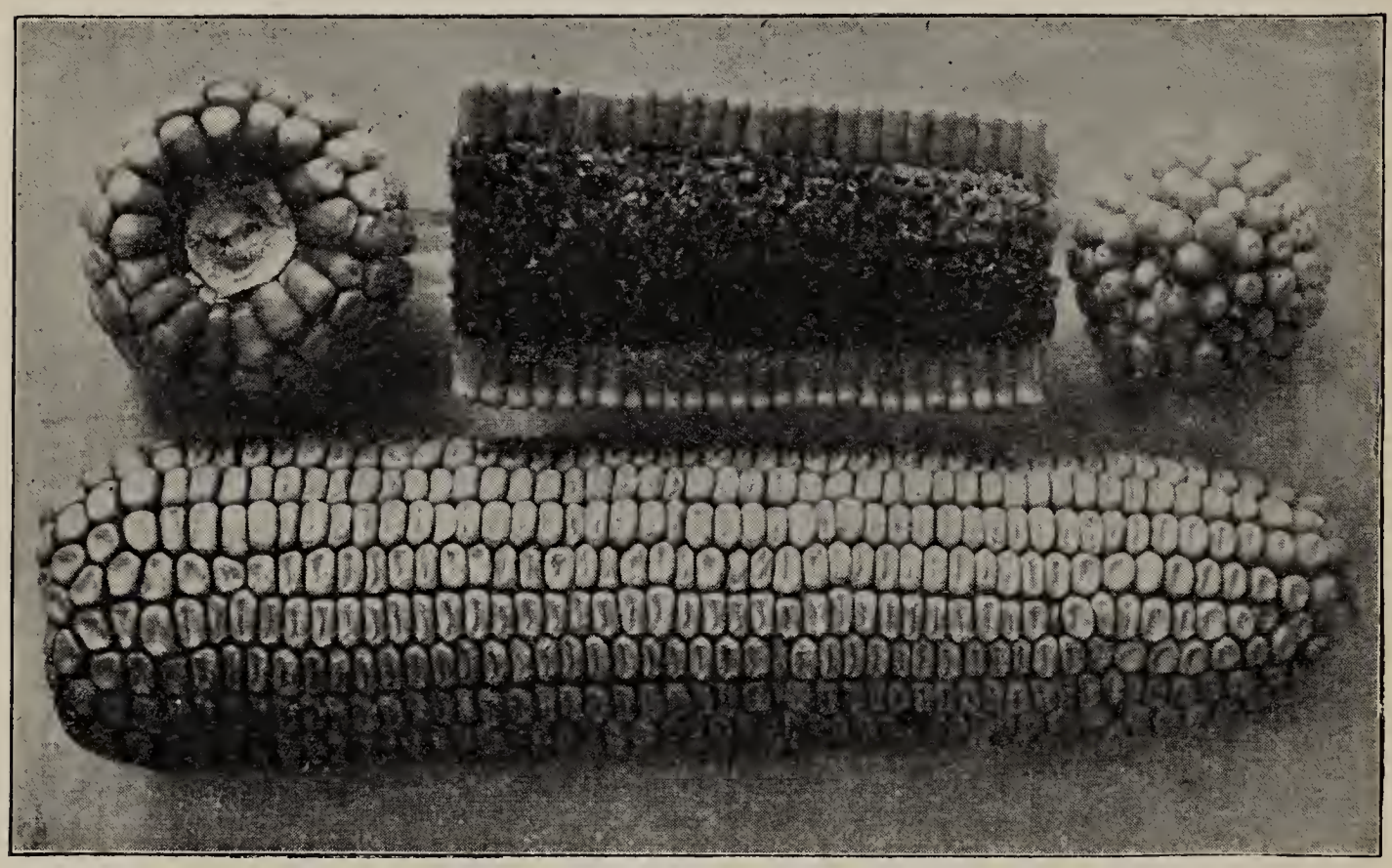

FIG. 5.—Two ears which possess excellent visible characters. (From Farmers' Bulletin No. 229.)

to the shank and extending clear over the end of the cob to the tip. The cob should be of medium size, about one-half the diameter of the ear, at a distance of one-third from the base, and the length of the ear should be about four times its diameter. Extra large or extra long ears should be avoided as much as small ears.

The accompanying cuts (figs. 5 and 6) show the characteristic qualities of a desirable and an undesirable ear.

The grains of the ear should be of uniform size and should fit snugly. They should be fairly long, nearly flat on the sides, and slightly tapering on both edges. The dent should be only slight and the outer ends should be well filled out and not chaffy.

THE SEED PATCH.

When ready to plant, select from this lot of corn as many ears as are necessary for the seed patch of as nearly uniform color, shape,

and size as possible. Remove the imperfect and irregular grains at tip and butt and plant the remainder in carefully prepared ground. Have the seed patch as far removed from other cornfields as can be, so as to avoid mixing. Give this patch special care and cultivation, and practice the same care in selection each year. The patch should not be too large; one-fourth to one-half acre is ample for the average farm. After making final selection for the seed patch, the remainder of the selected corn can be used for the main crop. By keeping up this practice of selection from year to year a wonderful improvement can be made in the yield and quality of corn.

It has been demonstrated that, all other conditions being equal, an average increase in the yield over common corn of from 3 to 5 bushels

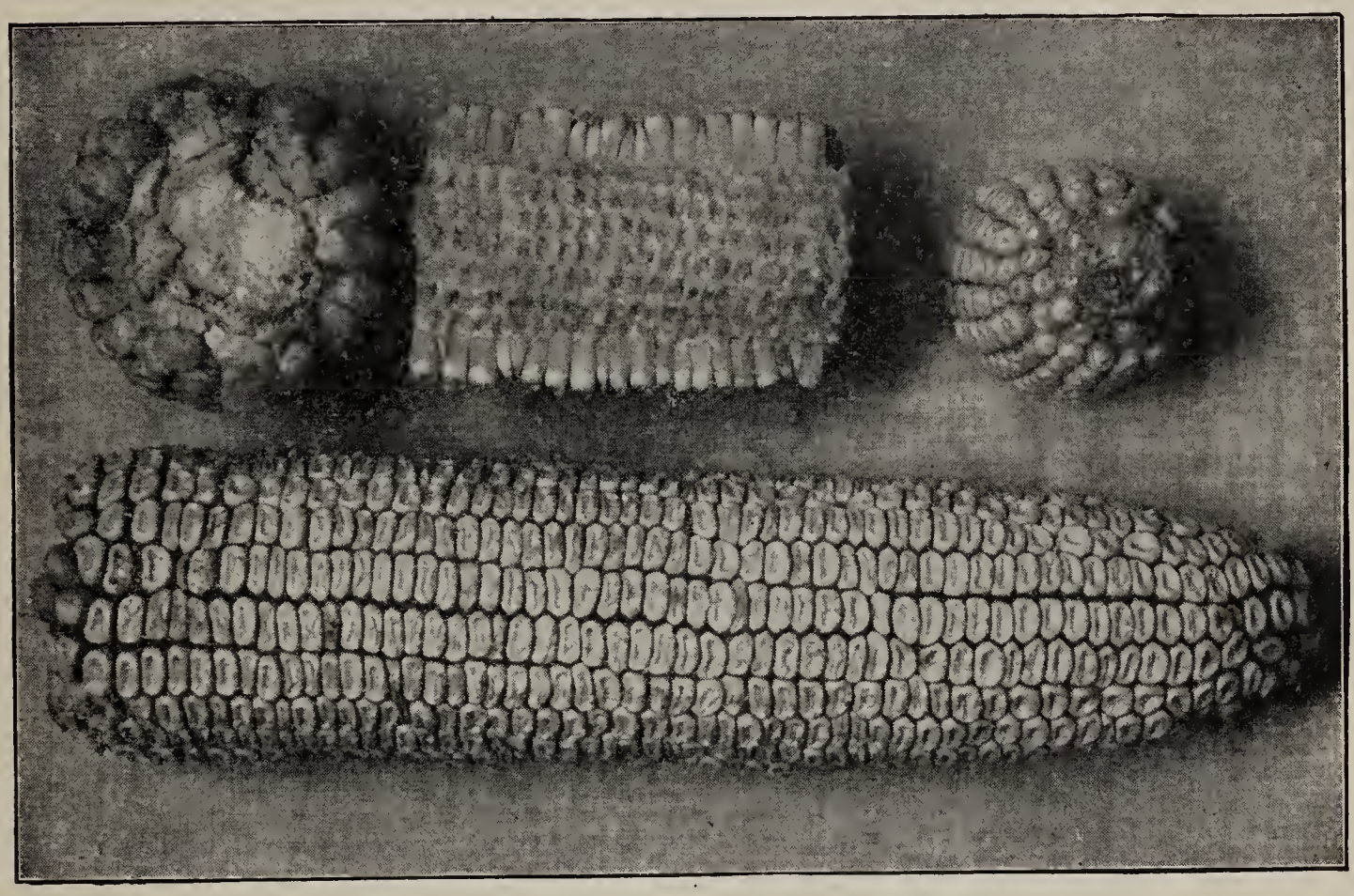

FIG. 6.—Two undesirable ears. (From Farmers' Bulletin No. 229.)

per acre can easily be made the first year. As the whole crop is improved, of course this rate of increase will not be so rapid, but if persisted in from year to year the careful selection of seed will have an ultimate marked effect upon the corn yield.

HOW THE FARMER MAY PROFIT BY SEED SELECTION.

The farmer who follows this practice of seed selection persistently will not only be repaid in the increased yield of his corn, but he will soon find that he can command quite a premium for it from his less progressive neighbors by selling it to them for seed at a price much greater than ordinary seed corn commands. The satisfaction of knowing that he has a better corn for his conditions than can be purchased at any price will be an additional compensation.

The South is in greater need of improved varieties of corn than is the case with any of her other crops. Cotton has received fairly good attention, but the corn crop has been sadly neglected. Our people are beginning to realize its importance, and quite a remunerative field of industry awaits the farmer who will make a business of raising reliable seed corn. Owing to the fact that corn is so easily influenced by a change of climate and soil, the field for this industry is very broad and is not likely to become crowded.

GERMINATION TEST FOR SEED CORN.

A great amount of trouble in securing stands from all purchased seed, and especially that of corn, is due to the fact that much seed so obtained is of low vitality. When it is necessary to purchase seed corn, the seller should always be required to guarantee a germination of 100 per cent. Always buy seed corn upon the ear; then you can form some idea of what is being purchased. Afterwards test its germinative power as follows:[a]

Have an ordinary box about 12 inches wide, 18 inches long, and 12 inches deep. Put into the bottom 8 inches of horse dung, wetting it well and packing it into the box. On top of this place 2 inches of well dampened sandy soil and fit a piece of muslin or thin cloth into the box on top of this. The muslin should previously have been marked into 1-inch squares with a pencil or ink, these squares being numbered. Now number the ears to be tested to correspond with the squares. Take three grains of corn from each ear, one near the butt, one at the middle, and one near the tip, taking each grain from a different row. Place each set of grains on the square of muslin corresponding to the number of the ear. When all the squares, or as many as you have ears to be tested, are occupied, cover them with several thicknesses of a damp, heavy cloth and set the whole in a warm place.

In about seven or eight days, or even in a shorter time if the weather is warm, examine the grains and take for seed only those ears from which all the grains have germinated. This precaution will avoid much disappointment in securing stands.

S. A. Knapp,
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D. N. Barrow,
Assistant.

Approved:
B. T. Galloway,
Chief of Bureau.

June 25, 1908.

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[a] See Farmers' Bulletin No. 229, entitled "The Production of Good Seed Corn," which will be sent without cost upon application to the Secretary of Agriculture.

U.S.D.A. - Bur. of Plant Industry

Seed selection for southern farms

George Peabody Col. for teachers
Nashville, Tenn.
(Gertrude L. Didcoct, librn.)

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